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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/574,041

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EXAMINER

DUONG, THO V

ART UNIT

PAPER NUMBER

3744

MAIL DATE

DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/574,041	Applicant(s) USUI ET AL.	
	Examiner Tho v. Duong	Art Unit 3744	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 April 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) 1,3,13 and 14 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 2,4-12 and 15-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|----------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>3/28/06</u> . | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

Claims 1,3 and 13-14 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected species, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 4/12/10.

Election/Restrictions

Applicant's election with traverse of group II of figures 18- 25 in the reply filed on 4/12/10 is acknowledged. The traversal is on the ground(s) that the difference between species of group I and species of group II is insignificant. This is not found persuasive because the species of group II requires a plurality of separate fins, each is disposed within an insertion gap between two straight portion of one meandering portion while the species of group I requires only a single corrugate fins disposed across an opposing gap between two meandering portions of the pair. Therefore, the species lack of the same special technical feature.

The requirement is still deemed proper and is therefore made FINAL.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 2,4-5,7,15 and 23 are rejected under 35 U.S.C. 102(b) as being anticipated by Marukasa Shigeo (JP 2000199697A). Marukasa discloses (figures 1-5) a plurality of fin

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members (3) composes of a plurality of parallel plate fins (3a) arranged in parallel, the fins having both opposing end surfaces provided with a plurality of engagement grooves (35) in parallel and at regular spaces; a meandering pipe main body including a plurality of straight pipe section to be disposed in the engagement grooves of the fin members; the plurality of straight pipe sections arranged in parallel and spaced by an insertion gap (vertical gap); a pair of meandering sections formed such that the plurality of straight pipe section are joined through bend portions (5), the pairs of meandering sections arranged so as to be opposed to each other through an opposing gap for fin members (horizontal gap); a connection pipe (b) has a curved portion to arranged to form a narrow distance between the one and the other meandering sections; the opposing straight pipe sections of the one and the other meandering sections of the meandering pipe main section are paired and wherein within the plurality of insertion gap for the fin members formed in a tired manner between a plurality of pair of adjacent straight pipe sections, each fin member is placed so as to lie astride the one and the other meandering sections, and wherein the straight pipe sections of the one meandering section are disposed in the engagement grooves (35) on one end surface of the fin members, and the straight pipe sections of the other meandering section are disposed in the engagement grooves on the other surface of the fin members in a secured manner; the engagement grooves are provided at each opposing end surface at a non- bend surface side of the corrugated fin. Regarding claim 15, the fin is formed with tapered end portions (clipping members) to securely clip the fin to the straight pipe section. Regarding claim 23, the fin tapering portions also provide a plurality of flow channels, which is capable of allowing air flowing through.

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Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 8,9,11,12 and 19-21 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Marukasa Shigeo (JP 2000199697A). Marukasa discloses all of applicant's claimed apparatus except for the method of forming the product such as cutting, press deforming, method of inserting the tube into the groove and method of forming a narrow space. However, these methods are not germane to the issue of the patentability of the device itself. "Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). In this case, the heat exchanger in the product by process claim is the same as or obvious from the heat exchanger of the prior arts, the claim is unpatentable even though the prior heat exchanger was made by a different process. Regarding claim 19, fins and the tubes have surfaces, which is capable of being subjected to any coating process.

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Marukasa in view of Pasternak (US 3,780,799). Marukasa substantially discloses all of applicant's claimed

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invention as discussed above except for the limitation of collars brought in surface contact with an outer surface of the meandering pipe. Pasternak discloses (figures 2,5-6) that each groove of the fin (4) has collars (35) brought in surface contact with an outer peripheral surface of the meandering pipe main body for a purpose of increasing the heat transfer contact between the fin and the pipe. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use Pasternak's teaching in Marukasa's device for a purpose of increasing the heat transfer contact between the fin and the pipe. .

Claims 2,4,6,8,9,10,12,19,22 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tokyo Radiator Mfg (JP 63-190777) in view of Aoki Hitoshi (JP 09-042877). Tokyo discloses (figures 1-3) a plurality of fin members composes of a plurality of fins (7) arranged in parallel, the fins having both opposing end surfaces provided with a plurality of engagement grooves (7a) in parallel and at regular spaces; a meandering pipe main body including a plurality of straight pipe section (6) to be disposed in the engagement grooves of the fin members; the plurality of straight pipe sections arranged in parallel and spaced by an insertion gap (shown in figure 1); a pair of meandering sections formed such that the plurality of straight pipe section are joined through bend portions, the pairs of meandering sections arranged so as to be opposed to each other through an opposing gap for fin members (shown in figure 2), wherein the opposing straight pipe sections of the one and the other meandering sections of the meandering pipe main section are paired and wherein within the plurality of insertion gap for the fin members formed in a tired manner between a plurality of pair of adjacent straight pipe sections, each fin member is placed so as to lie astride the one and the other meandering sections,

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and wherein the straight pipe sections of the one meandering section are disposed in the engagement grooves (7a) on one end surface of the fin members, and the straight pipe sections of the other meandering section are disposed in the engagement grooves on the other surface of the fin members in a secured manner; the engagement grooves are provided at each opposing end surface at a bend surface side of the corrugated fin; the engagement grooves has a convex shape and collars (figures 3 and 4c,d) brought in surface contact with the pipe body; and the fin member is so formed that each fin is provided with a plurality of flow channels (7b). Tokyo does not disclose a connection pipe for connecting the one meandering section and the other meandering section opposing to each other and the end portion sides of each fin are bent to form incline surfaces. Aoki discloses (figure 11 and 12) a coiled heat exchanger that has a meandering pipe main body include a pair of meandering sections and a connection pipe (bottom 32a) connecting the one meandering section and the other meandering section opposing to each other for a purpose of utilizing a single pipe in forming the meandering pipe main body. Aoki further discloses that end portion sides of each fin are bent to form inclined surfaces (27a) for a purpose of forming air flow guide for the fin. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use Aoki's teaching in Tokyo's device for a purpose of utilizing a single pipe in forming the meandering pipe main body and also forming air flow guide for the fin. Regarding claims 8,9,10 and 12, the method of forming the device (cutting off, press deformed, method in claim 12 and subjected to a coating process, etc) is not germane to the issue of the patentability of the device itself. "Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the

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product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.” In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). In this case, the heat exchanger in the product by process claim is the same as or obvious from the heat exchanger of the prior arts, the claim is unpatentable even though the prior heat exchanger was made by a different process. Regarding claim 19, fins and the tubes have surfaces, which is capable of being subjected to any coating process.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tokyo Radiator Mfg in view of Aoki Hitoshi as applied to claim 2 above, and further in view of Kramer (US 2,475,187). Tokyo and Aoki substantially disclose all of applicant’s claimed invention as discussed above except for the limitation that the fin member is composed of a plurality of plate fins arranged in parallel. Kramer discloses (figures 1 and 2) a coiled heat exchanger that has the fin member is composed of a plurality of plate fins (3) arranged in parallel for a purpose of allowing the fins can be easily removed or inserted within two adjacent straight portion of the meandering pipe. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use Kramer’s teaching in the combination device of Tokyo and Hitoshi for a purpose of allowing the fins can be easily removed or inserted within two adjacent straight portion of the meandering pipe.

Claims 7 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tokyo and Hitoshi as applied to claim 2 above, and further in view of C. S. Simpelaar (US 3,106,958). Tokyo and Hitoshi substantially disclose all of applicant’s claimed invention as discussed above except for the limitation that the grooves are provided at opposing end surface at a non-bend

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surface side of the corrugate fin and the meandering pipe is formed to have a width larger than of the engagement grooves. Simpellar discloses (figures 1,3-5 and column 3, lines 4-7) a meandering heat exchanger that has the opposing grooves of the fins (16) formed at a non-bend surface side of the fin so that the grooves can be easily to be formed and the pipe has a width larger than the width of the grooves (19) for a purpose of forming a snugly fit between the pipe and the fin. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use Simpellar's teaching in the combination device of Tokyo and Hitoshi for a purpose of forming a snugly fit between the pipe and the fin.

Claims 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tokyo and Hitoshi as applied to claim 2 above, and further in view of Arai Nobushige (JP 54088867A). Tokyo and Hitoshi substantially disclose all of applicant's claimed invention as discussed above except for the limitation of using a thermoplastic resin to adhere the pipe and the fin. Arai discloses a use of a thermoplastic resin coating on a heat exchanger pipe, which is melted to bond the pipe and the fin for a purpose of forming a good workability, adhesion and antirust force for the heat exchanger. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use Arai's teaching in the combination device of Tokyo and Hitoshi for a purpose of forming a good workability, adhesion and antirust force for the heat exchanger.

Claims 15 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tokyo and Hitoshi as applied to claims 4 and 12 above, and further in view of Forst et al. (US 2,998,639). Tokyo and Hitoshi substantially discloses all of applicant's claimed invention as

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discussed above except for the limitation of clipping members, Forst discloses (figures 2-5) a heat exchanger has clipping members (9) for a purpose of securing the bend portion of the fin to be clipped between the meandering sections of the pipe. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use Forst's teaching in the combination device of Tokyo and Hitoshi for a purpose of securing the bend portion of the fin to be clipped between the meandering sections of the pipe.

Claims 15 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tokyo and Hitoshi as applied to claims 4 and 12 above, and further in view of Paulman et al. (US 4,881,311). Tokyo and Hitoshi substantially discloses all of applicant's claimed invention as discussed above except for the limitation of clipping members, Paulman discloses (figures 4-5) a heat exchanger has clipping members (51) for a purpose of securing the bend portion of the fin to be clipped to the meandering sections of the pipe. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use Paulman's teaching in the combination device of Tokyo and Hitoshi for a purpose of securing the bend portion of the fin to be clipped to the meandering sections of the pipe.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

H. M. Yeager (US 1,773,249) discloses a condenser.

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Smithey et al. (US 2005/0092473A1) discloses a flexible tube arrangement heat exchange design.

Alford (US 4,434,843) discloses a heat exchanger apparatus.

J. B. Thomas et al. (US 2,908,070) discloses a method of making serpentine heat exchanger.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tho v. Duong whose telephone number is 571-272-4793. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tyler J. Cheryl can be reached on 571-272-4834. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Tho v Duong/
Primary Examiner, Art Unit 3744

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